

**Example #9:** A motor operating at full speed draws a current of 4.0 A when connected to a 110 V source. If the motor has an armature resistance of 3.5  $\Omega$ , what is the back EMF at full speed?

$$V_{\text{back}} = \mathcal{E} - I r_a$$
$$= 110 - (4.0)(3.5)$$

$$V_{\text{back}} = 96 \text{ V}$$